IN THE DRAWINGS:

Add new Figures 3-5 submitted herewith.

IN THE CLAIMS:

1. (Currently Amended) An anti-glare film comprising an anti-glare layer, and a resin layer having a low refraction index formed on at least one side of the anti-glare layer,

wherein the anti-glare layer has an uneven surface structure, and the anti-glare film isotropically transmits and scatters an incident light to show the maximum value of the scattered light intensity at a scattering angle of 0.1 to 10°, and has a total light transmittance of 70 to 100%, and

wherein the anti-glare layer is formed from at least one polymer and at least one curable resin precursor having a molecular weight of not more than 5000, and is prepared by phase-separating with spinodal decomposition from a liquid phase at least two components selected from the group consisting of polymers and curable resin precursors, and curing at least one of the precursors, and

said resin layer comprises a fluorine-containing resin having a refraction index of 1.36 to 1.49.

2. (Original) An anti-glare film according to claim 1, which has a visibility of a transmitted image of 70 to 100% measured by an image clarity measuring apparatus provided with an optical slit of 0.5 mm width, and has a haze of 10 to 60%.

3. (Original) An anti-glare film according to claim 1, which isotropically transmits and scatters an incident light to show the maximum value of the scattered light intensity at a scattering angle of 1 to 10°, and has a total light transmittance of 80 to 100%.

4. (Canceled)

5. (Currently Amended) An anti-glare film according to claim 1 ~~claim 4~~, wherein (i) a plurality of polymers, (ii) a combination of a polymer and a curable resin precursor, or (iii) a plurality of curable resin precursors is phase-separated by spinodal decomposition.

6. (Currently Amended) An anti-glare film according to claim 1 ~~claim 4~~, wherein the polymer comprises a plurality of polymers being phase-separable from each other by spinodal decomposition, and ~~the~~ at least one curable resin precursor is compatible with at least one polymer of the plurality of polymers.

7. (Currently Amended) An anti-glare film according to claim 6, wherein at least one polymer of the plurality of polymers has a functional group participating in a curing reaction of ~~the~~ at least one curable resin precursor.

8. (Original) An anti-glare film according to claim 6, wherein at least one polymer of the plurality of polymers has a (meth)acryloyl group.

9. (Original) An anti-glare film according to claim 7, wherein the plurality of polymers phase-separated by spinodal decomposition comprise a cellulose derivative and at least one resin selected from the group consisting of a styrenic resin, a (meth)acrylic resin, an alicyclic olefinic

resin, a polycarbonate-series resin, and a polyester-series resin; and at least one polymer of the polymers has a polymerizable group.

10. (Currently Amended) An anti-glare film according to claim 1 ~~claim 4~~, wherein ~~the~~ at least one curable resin precursor comprises at least one member selected from the group consisting of an epoxy (meth)acrylate, a urethane (meth)acrylate, a polyester (meth)acrylate, a silicone (meth)acrylate, and a polyfunctional monomer having at least two polymerizable unsaturated bonds.

11. (Currently Amended) An anti-glare film according to claim 1 ~~claim 4~~, wherein abrasion resistance is imparted to the anti-glare layer by curing at least one curable resin precursor ~~the cured resin~~.

12. (Currently Amended) An anti-glare film according to claim 1 ~~claim 4~~, wherein the anti-glare layer has a regular or periodical phase-separation structure fixed by curing at least one curable resin precursor ~~the cured resin~~.

13. (Original) An anti-glare film according to claim 1, wherein the anti-glare layer is cured with at least one curing means selected from the group consisting of an actinic ray and a thermal source.

14. (Original) An anti-glare film according to claim 1, wherein the anti-glare layer comprises a polymer and a cured resin, and the weight ratio of the former relative to the latter is 5/95 to 60/40.

15-16. (Canceled)

17. (Original) An anti-glare film according to claim 1, wherein the resin layer comprises a curable fluorine-containing resin precursor, and the precursor is cured with at least one curing means selected from the group consisting of an actinic ray and a thermal source.

18. (Original) An anti-glare film according to claim 1, wherein the anti-glare layer and the resin layer are formed on a transparent support in this order.

19. (Original) An anti-glare film according to claim 18, wherein the transparent support comprises a transparent polymer film for forming an optical member.

20. (Original) An anti-glare film according to claim 1, which is used for at least one display device or apparatus selected from the group consisting of a liquid crystal display device or apparatus, a plasma display and a touch panel-equipped input device.

21. (Withdrawn) A process for producing an anti-glare film, which comprises

forming a phase separation structure by spinodal decomposition from a liquid phase with evaporating a solvent, wherein the liquid phase contains at least one polymer, at least one curable resin precursor, and the solvent,

curing the resin precursor to form an anti-glare layer, and

forming a resin layer having a low refraction index on at least one side of the anti-glare layer.

22. (Withdrawn) A process according to claim 21, which comprises phase-separating (i) a plurality of polymers, (ii) a combination of a polymer and a curable resin precursor, or (iii) a plurality of curable resin precursors.

23. (Withdrawn) A process according to claim 21, which comprises phase-separating a composition composed of a thermoplastic resin, a photo-curable compound, a photopolymerization initiator, and a solvent for dissolving the thermoplastic resin and the photo-curable compound; and curing the resin precursor by a light irradiation.

24. (Withdrawn) A process according to claim 21, which comprises phase-separating a composition composed of a thermoplastic resin, a resin being incompatible with the thermoplastic resin and having a photo-curable group, a photo-curable compound, a photopolymerization initiator, and a solvent for dissolving the resin and the photo-curable compound; and curing the resin precursor by a light irradiation.

25. (Withdrawn) A process according to claim 21, wherein at least one anti-glare layer is formed on a transparent support, and the resin layer is formed on the anti-glare layer.

26. (Original) An optical member in which a film recited in claim 1 is laminated on at least one side of a polarizing plate.

REMARKS

Claims 1-3, 5-14, and 17-26 remain pending after amendment. Claims 21-25 stand withdrawn from consideration.

Claim Amendments

By this amendment, claims 4, 15 and 16 are cancelled. The claims are also amended as discussed below.

(1) Claim 1

In order to clarify differences between the present invention and the cited references, the anti-glare layer in claim 1 is amended to be directed to an anti-glare layer comprising at least one polymer and at least one curable resin precursor having the specific molecular weight, and prepared by specific phase-separating and curing method. Support for the noted amendment resides at cancelled claims 4 and 16, and page 31, lines 2 – 4 of the specification.

Moreover, for the purpose of more clearly distinguishing the low refraction index layer from a support disclosed in Takahashi, the refraction index of the resin constituting the layer in claim 1 is specified as being "1.36-1.49". Support for this amendment resides at cancelled claim 15, as well as page 39, line 3 of the specification.

(2) Claims 5-7 and 10

Claims 6, 7 and 10 are amended to replace the phrase "the curable resin precursor" in claims 6, 7 and 10 with the phrase "at least one curable resin precursor" in conformity with cancelled claim 4 (which limitation now resides in claim 1). Claims 5, 6 and 10 are also amended to depend from claim 1.

(3) Claims 11 and 12

The phrase "by the cured resin" is amended to read "by curing at least one curable resin precursor" consistent with the specification at page 26, lines 13-20, and page 53, lines 9-14. The noted claims are also amended to depend from claim 1.

No new matter is added by the above amendments.

Specification and Drawing Amendments

New Figures 3-5 are added directed to the embodiments claimed at claims 1, 18, 19 and 26 in response to the request of the Examiner. The specification is amended accordingly. Additionally, a portion of the specification originally residing in the "Summary" portion of the specification is deleted, and inserted in the "Description" portion of the specification. No new matter is added by these amendments.

Restriction Requirement

Applicants acknowledge the indication of Finality of the restriction requirement. Claims 21-25 stand withdrawn from consideration.

Objection to Abstract

The Abstract stands objected to by the Examiner. In response, a substitute Abstract is presented herewith. The objection is thus moot and should be withdrawn.

Objection to Disclosure

The summary of the invention is objected to "because it contains numerous details of the invention". This objection respectfully is traversed.

In response, the noted portion of the specification is amended in a manner which is believed to overcome the objection. The objection is thus moot and should be withdrawn.

Objection to Drawings

The drawings are objected to for the reason that they do not depict the laminate structure of claims 1, 18, 19, and 26.

In response, new Figures 3-5 are added which are believed to overcome the objection of the Examiner.

Objection to Claims

Claims 4, 6, 7, and 10-12 stand objected to as containing several informalities.

In response, claims 4, 6, 7 and 10-12 are amended in a manner which is believed to overcome the objections of the Examiner. The objection is thus without basis and should be withdrawn.

Obviousness-type Double Patenting Rejection

Claims 1-14 and 18-20 stand rejected on the ground of obviousness-type double patenting over claims 1-16 of U.S. Patent No. 6,945,656.

Claims 15-17 and 26 stand rejected on the ground of obviousness-type double patenting over claims 1-16 of U.S. Patent No. 6,945,656 in view of Tadahiro et al '411.

In response, a terminal disclaimer is submitted directed to the cited U.S. Patent No. 6,945,656.

The above two double patenting rejections are thus moot and should be withdrawn.

Rejection under 35 USC 102(e)

Claims 1, 3-20 and 26 stand rejected as being anticipated by Takahashi et al '958. This rejection is respectfully traversed.

Takahashi discloses a light-scattering sheet comprising a light-scattering layer which comprises a plurality of polymers varying in refractive index having at least bicontinuous phase structure. The bicontinuous phase structure is formed by spinodal decomposition from liquid phase comprising a plurality of polymers, wherein an average interphase distance of the bicontinuous phase is 0.5 to 20 μm. See claim 1 of the patent in this regard.

Takahashi further teaches at claim 2 that an incident light is scattered isotropically, and the transmitted and scattered light has a maximum intensity of a scattered light at a scattering angle of 2 to 40° and a total light transmittance of 70 to 100%.

Regarding the polymer employed, the reference teaches at column 4, line 61 to column 5, line 8 that such polymers can be selected from styrenic resins, (meth)acrylic resins, vinyl ester-series resins, vinyl ether-series resins, halogen-containing resins, olefinic resins, polycarbonate-series resins, polyester-series resins, polyamide-series resins, thermoplastic polyurethane-series resins, polysulfone-series resins, polyphenylene ether-series resins, cellulose derivatives, silicone resins, and rubbers or elastomers in suitable combination. The first polymer may comprise a cellulose derivative, and the second polymer may comprise at least one polymer selected from the group consisting of styrenic resins, (meth)acrylic resins, cyclic olefinic resins,

polycarbonate-series resins and polyester-series resins (claim 9). The weight-average molecular weight may range from not more than 1,000,000 (e.g., about 10,000 to 1,000,000), preferably about 10,000 to 700,000 (column 7, lines 45-47).

Further, Takahashi states "since the wet phase separation process by evaporating or removing a solvent from a liquid phase containing a plurality of polymers to spinodal decomposition is adopted, a light-scattering layer which has substantially isotropic bicontinuous phase structure can be formed regardless of compatibility of a plurality of resins in principle" (column 7, lines 48-54).

Furthermore, it is taught at claim 10 that the light-scattering sheet comprises a transparent support and the light-scattering layer formed on at least one side of the support.

Takahashi describes its attendant advantages as providing a transmittable light-scattering sheet having substantially isotropic bicontinuous phase structure at low cost by spinodal decomposition from a liquid phase. The transmittable light-scattering sheet is used so that diffusibility and high directionality can be imparted to a reflected light. The reference teaches that, even in a color display unit, the display screen of the reflective LCD unit can be significantly illuminated (column 14, lines 24-32).

The cited reference fails to disclose or suggest the claimed invention.

Takahashi fails to disclose or suggest the combination of the specific anti-glare layer and the specific low refraction index layer. Specifically, the reference not only fails to disclose or suggest the anti-glare layer comprising at least one polymer and at least one curable resin precursor having the specific molecular weight, but also an anti-glare layer having a specific surface structure and light scattering properties.

Although Takahashi discloses light-scattering layer on a transparent support, there is no teaching or suggestion to laminate an anti-glare layer and a resin layer having a lower refraction index, as is apparent from the fact that Takahashi does not teach the refraction index of the transparent support and a fluorine-containing resin for the support.

Moreover, the light-scattering layer of Takahashi is prepared by removing a solvent from a liquid phase containing a plurality of polymers (thermoplastic resins having the molecular weight of about 10,000 to 1,000,000) for spinodal decomposition. However, such a polymer is clearly different from the curable resin precursor of the present invention, because the molecular weight of the precursor is clearly smaller than that of the above polymer. Accordingly, since Takahashi does not use such a precursor, the resultant film does not have an uneven surface structure corresponding to the regular phase-separation structure which results from curing.

The present invention enables highly desirable results to be achieved. That is, since the reference lacks the low refraction index layer on the anti-glare layer, external light is not inhibited from being reflected in the surface of the antiglare film, when the film is used in an optical member or others. Moreover, the light-scattering layer of Takahashi comprises a plurality of thermoplastic resins. Thus, the surface layer of Takahashi cannot provide high abrasion resistance.

On the other hand, since the anti-glare film of the present invention comprises a specific anti-glare, and a specific low refraction index layer in combination, high anti-glareness can be obtained, and reflection of an external light is effectively inhibited even though the film is used in the optical member. Moreover, because of the specific anti-glare layer, reflection of a surrounding scenery and dazzle in a display surface are effectively inhibited, even in a high definition display apparatus.

Not only can such results not be predicted from the teachings of the cited prior art, but the cited reference fails to anticipate the claimed invention. The rejection should accordingly be withdrawn.

Rejection under 35 USC 102(b)

Claims 1, 3, 18-20 and 26 stand rejected under 35 USC 102(b) as being anticipated by Uchiyama et al '153. This rejection is respectfully traversed.

Uchiyama discloses a micro void-containing oriented film comprising a thermoplastic polymer, containing a number of micro voids in the film and varying a scattering property of a transmitted light depending upon an angle, and having a total light transmittance of at least 80%. See claim 1 of the patent.

Regarding the thermoplastic polymer, Uchiyama describes examples of such thermoplastic polymer as being polycarbonate, polyarylate, polymethacrylate, polyacrylonitrile, polymethyl methacrylate, polyacrylate, polyethylene terephthalate, polyethylene naphthalate, polyethylene, polypropylene, polystyrene, polyvinyl chloride, polyvinyl alcohol, polyether sulfone, polysulfone, polyimide, polyamide, polyether ketone, polyolefin, triacetyl cellulose, and aromatic polymer liquid crystal. Such thermoplastic polymer may be used in the form of a copolymer or a blend of two or more kinds of the polymers. (column 6, lines 56-65)

Further, the oriented film of the reference may be subjected to conventional hard-coat treatment, antireflection treatment, antiglare treatment, etc., at one or both surfaces. A photosetting resin or a thermosetting resin such as acrylic polymer or silicone polymer or a metal oxide such as silicon oxide, etc., is used in the above treatment. See column 12, lines 53-59 of the reference.

Furthermore, the oriented film of the reference may be used in combination with a film or sheet made of a transparent polymer (column 12, lines 65-66).

Regarding the advantages of Uchiyama, the reference states "This invention provides a film which scatters the incident light depending upon an incident angle of the light in the course of transmitting through the film, i.e., a controllable light-scattering film, by uniaxially drawing a film made of a thermoplastic polymer. . . . The oriented film of the present invention can be produced by using a conventional film-manufacturing facility in high productivity and has a great industrial significance" (column 13, lines 16-26).

However, the reference fails to disclose or suggest the combination of the specific anti-glare layer and the specific low refraction index layer of the claimed invention. Specifically, the reference fails to disclose or suggest not only the anti-glare layer comprising at least one polymer, the presence of at least one curable resin precursor having the specific molecular weight, but also an anti-glare layer having a specific surface structure and light scattering properties.

Uchiyama discloses a micro void-containing oriented film comprising a thermoplastic polymer or treated with the antiglare treatment as a conventional treatment. However, Uchiyama fails to disclose phase separation by spinodal decomposition, the curable resin precursor, or lamination of the film with the specific low refraction index layer.

Again, the present invention enables highly desirable results to be achieved. That is, since the reference lacks the low refraction index layer on the anti-glare layer, external light is not inhibited from being reflected in the surface of the antiglare film, when the film is used in an optical member or others.

Further, since the micro void-containing film of the reference is prepared by orienting a film comprising a thermoplastic polymer, an even surface structure having regularity cannot be

formed, and accordingly, anti-glareness of the film cannot be improved. Furthermore, since the film of Uchiyama comprises the thermoplastic polymer, high abrasion resistance of the film would not be improved.

On the other hand, since the anti-glare film of the present invention comprises a specific anti-glare, and a specific low refraction index layer in combination, high anti-glareness can be obtained, and reflection of an external light is effectively inhibited even though the film is used in the optical member. Moreover, because of the specific anti-glare layer, reflection of a surrounding scenery and dazzle in a display surface are effectively inhibited, even in a high definition display apparatus.

Not only can such results not be predicted from the teachings of the cited prior art, but the cited reference fails to anticipate the claimed invention. The rejection should be withdrawn.

Rejection under 35 USC 103(a)

Claim 2 stands rejected under 35 USC 103(a) as being unpatentable over Takahashi et al '958. This rejection is respectfully traversed.

The deficiencies of Takahashi et al '958 are discussed at length above. Given such deficiencies, and in view of the amendment of claim 1 (from which claim 2 depends), the rejection is without basis and should be withdrawn.

The application is now believed to be in condition for allowance.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Attachments: Terminal Disclaimer
New Figures 3-5